Mosaic Chain

LITEPAPER

An introduction to Mosaic Chain

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Abstract

The Mosaic Galaxy

At Mosaic Galaxy, we're driven by the vision of a truly decentralized financial world—a vision that's still evolving. We believe the future of DeFi holds immense potential, and we're here to accelerate its realization with cutting-edge, decentralized solutions. Our mission is to be at the forefront of this transformation, empowering the next generation of decentralized finance with innovation and technology.



The Story of Mosaic Chain

The concept of Mosaic Chain was born from our dedication to finding the perfect foundation for Mosaic Alpha - a decentralized exchange with unique portfolio management and social investing features, developed by our team.

As we began designing Mosaic Alpha, we searched for an ideal blockchain to host our vision. However, none met the high standards we set for this mission. Our unwavering commitment to excellence in finding the perfect home for our dApp led us to design Mosaic Chain—a blockchain built from the ground up with decentralized finance at its core.

Mosaic Chain provides the perfect environment for decentralized financial solutions, with every aspect tailored to meet the needs of trustless applications. It also ensures seamless interoperability with other blockchains, both within and beyond the Polkadot ecosystem. Through runtime upgrades, applications on Mosaic Chain can evolve without compromising decentralization.

Driven by our commitment to excellence, Mosaic Chain

- Powers sophisticated financial applications
- Simplifies the implementation of truly trustless systems
- Leverages the most secure technology available
- Focuses exclusively on finance, rather than being a universal blockchain

This vision gave birth to Mosaic Chain—a solution designed not only for our needs but for the wider blockchain community, pushing the boundaries of what is possible.

Mosaic Chain uses the best available technology with some brand-new solutions

State-of-the-art Foundation	Built on Polkadot's Substrate framework, Mosaic Chain benefits from the leading technology in blockchain infrastructure.
NFT-based Validators	We introduce a revolutionary system where validator rights are NFT-based, enhancing security and transparency.
Validator OS	ValidatorOS is designed to configure and maintain validator nodes without deep I.T. knowledge requirements.
Truly Decentralized	With over 1,900 validators, Mosaic Chain ensures robust decentralization from the start.
Validator Subset Selection	Our validator subset selection process guarantees optimal performance and fair validator selection, with 200 validators randomly selected for each session.

The Genesis Team

Though our Hungarian team is small, but we are ambitious, and driven by a relentless pursuit of innovation. We're constantly on the lookout for fresh ideas, talented developers, and exciting projects to collaborate on. For us, collaboration is the key to unlocking the future, and we know that by working together, we can create something truly remarkable. We invite you to join us on this journey and contribute to the evolution of decentralized finance.

Calling All Solidity Developers

We've spent years developing on Solidity before making the shift to a more secure, stable, and advanced framework. While we believe it's crucial for developers to build in the right environment —like Substrate, which we find preferable to EVM for many use cases —we fully recognize the significance of EVM compatibility.

That's why we're committed to supporting Solidity developers within our ecosystem. Though we don't have a fixed timeline yet, rest assured, we're working on providing top-tier solutions that meet our high standards. Whether we adopt an existing solution or develop our own, we aim to make Mosaic Chain accessible to all.

If you're passionate about innovation and want to be part of this evolving landscape, we'd love to hear from you!

The Mosaic Galaxy

Our Mission

At Mosaic Galaxy, our mission is to create an ecosystem where decentralized finance (DeFi) and financial projects can truly thrive—an environment specifically tailored to their unique needs. While large, universal blockchains offer many advantages, they often fall short in critical financial areas. Fast, low-cost, and reliable transactions are non-negotiable in finance, and the risk of stuck or delayed transactions simply cannot be accepted in a financial setting.

We believe that innovation flourishes in an environment designed to provide developers with the right tools. By focusing exclusively on the needs of financial applications and developers, we create an ecosystem that's agile, efficient, and fully optimized for decentralized finance.

We aren't distracted by unrelated sectors like IoT, car logs, or NFTs—our singular focus is finance.

We are dedicated to increasing the number of dApps on our blockchain through governance voting in our DAO. This decentralized method guarantees that growth is in line with the community's needs, fostering innovation and improving the overall ecosystem.

Although we can't prevent non-financial developers from launching projects on Mosaic Chain, it won't be the ideal home for them. Our blockchain is purpose-built for those who seek to push the boundaries of DeFi and financial innovation.



Our Vision

At Mosaic Chain, our vision is to create a seamless, decentralized future where financial innovation is accessible to all. We believe in breaking down the complexities of blockchain technology, delivering a streamlined and user-friendly ecosystem where DeFi thrives. Mosaic Chain is designed to empower both developers and users, making decentralized finance more intuitive, reliable, and inclusive.

By focusing on the needs of financial projects, Mosaic Chain fosters an ecosystem where innovation flows freely. Developers can build, scale, and launch sophisticated DeFi solutions without being burdened by the inefficiencies of universal blockchains. Through seamless integration and robust interoperability, Mosaic Chain creates an environment where financial products can flourish—free from the distractions of non-financial applications.

We envision a world where anyone can access advanced financial tools, from everyday investors to institutional developers, all through a single, powerful platform. With Mosaic Chain, decentralized finance becomes more than just a concept—it becomes the norm, unlocking new possibilities for financial independence, security, and growth.

Mosaic Alpha: Simplifying Crypto Investments

For those without a background in finance or blockchain technology, navigating the world of cryptocurrencies can feel overwhelming. Yet, many people still seek smart ways to invest in their future and protect their wealth from inflation. That's where Mosaic Alpha comes in.

Mosaic Alpha is the first DeFi product from the Mosaic Galaxy team. The platform serves the crypto community with a completely new approach to decentralized asset management, instead of relying on outdated copy trading models.

If you're ready to explore the world of decentralized finance with confidence, you can access it today at

www.app.mosaicalpha.com

From the very start, we set our sights high for Mosaic Alpha. We knew that creating our own blockchain would be the ultimate solution, but we didn't want to wait to bring our vision to life.

So, we launched on Binance Smart Chain as a temporary home, delivering low gas fees and strong liquidity right from the beginning. While we continue to build our own blockchain, Mosaic Alpha is already providing a powerful, cost-effective environment for users to dive into DeFi.

The core of Mosaic Alpha lies in Token Baskets, which give investors the opportunity to diversify their portfolio by investing in multiple crypto assets, with just one click.

These baskets bring together a variety of cryptocurrencies from both the Binance and Polkadot ecosystems (soon). Each Token Basket is represented by a single asset, allowing users to hold a diversified investment with ease.

Here's how it works: users' stakes in Token Baskets are represented as a collective proportion of the underlying crypto assets, managed by Basket Managers.

These assets are securely held in the users' own crypto wallets, and each basket is shown as a unique basket token.

What's more, these baskets are decentralized, managed investment products, meaning Basket Managers can continuously adjust the composition to maximize performance.

Ready to start your crypto investment journey?

www.mosaicalpha.com

Mosaic Chain

From the very beginning, the **Mosaic Galaxy team set out to find a blockchain that could meet the highest standards for decentralized financial services**. After extensive research, it became clear that no existing blockchain could deliver precisely what we envisioned for the future of decentralized business services. Instead of compromising, we decided to create something truly unique—Mosaic Chain.

By leveraging the cutting-edge Substrate blockchain framework and launching as a parachain in the Polkadot ecosystem, Mosaic Chain is purpose-built to meet the needs of financial innovation.

NFT-based Validators

Mosaic Chain stands apart with its novel NFT-based NPoS consensus mechanism. Validators hold NFTs, granting them the right to participate in the network. This groundbreaking approach is one of a kind in the blockchain world, pushing the boundaries of how validators interact with the ecosystem. Mosaic Chain is pioneering this new method of securing decentralized networks.

Plug & Play Validators

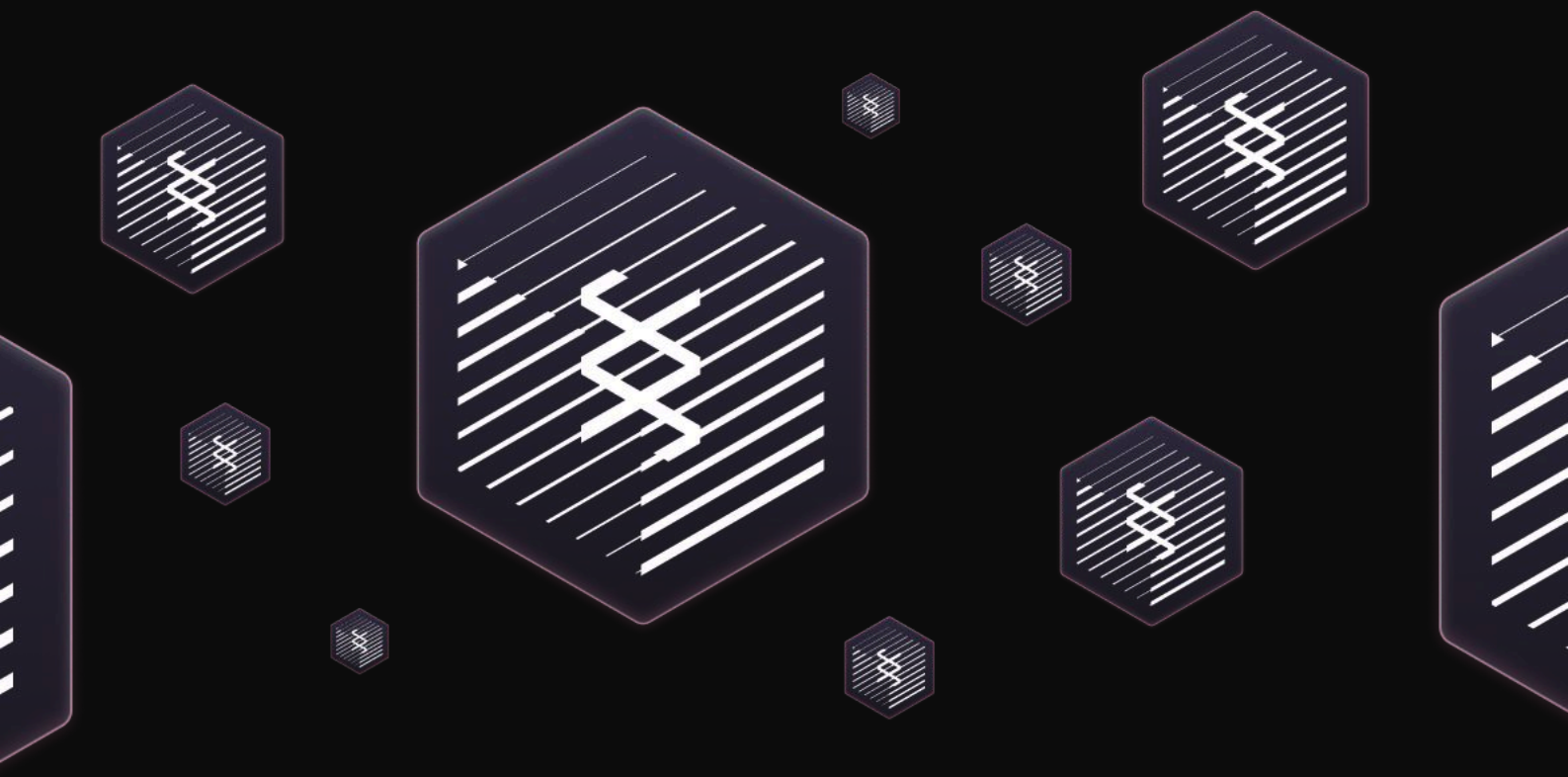
Becoming a validator on Mosaic Chain is simple and accessible. Thanks to a specialized Linux distribution, anyone can set up and run a validator node without needing deep technical knowledge. The system automatically boots and updates, making it easy for users to participate while still offering full control to power users who prefer to maintain their hardware manually.

Validator Subset Selection

To maintain decentralization and scalability, Mosaic Chain's innovative approach allows thousands of validators to join, with around 200 actively participating in consensus at any given time. Mosaic Chain's wrapped Aura consensus mechanism uses a randomized selection algorithm to rotate validators, ensuring fair participation and block rewards distribution week after week. This design strengthens decentralization while optimizing performance for the entire network.

Introducing Mosaic Chain

Mosaic Chain is built on Substrate



Polkadot: The Layer 0 Powerhouse Behind Mosaic Chain

Polkadot stands as the only Layer 0 blockchain, offering shared security for all connected Layer 1 blockchains, known as parachains. Unlike traditional blockchains, Polkadot's innovative security model allows it to oversee and protect these connected blockchains by continuously monitoring and validating data flows.

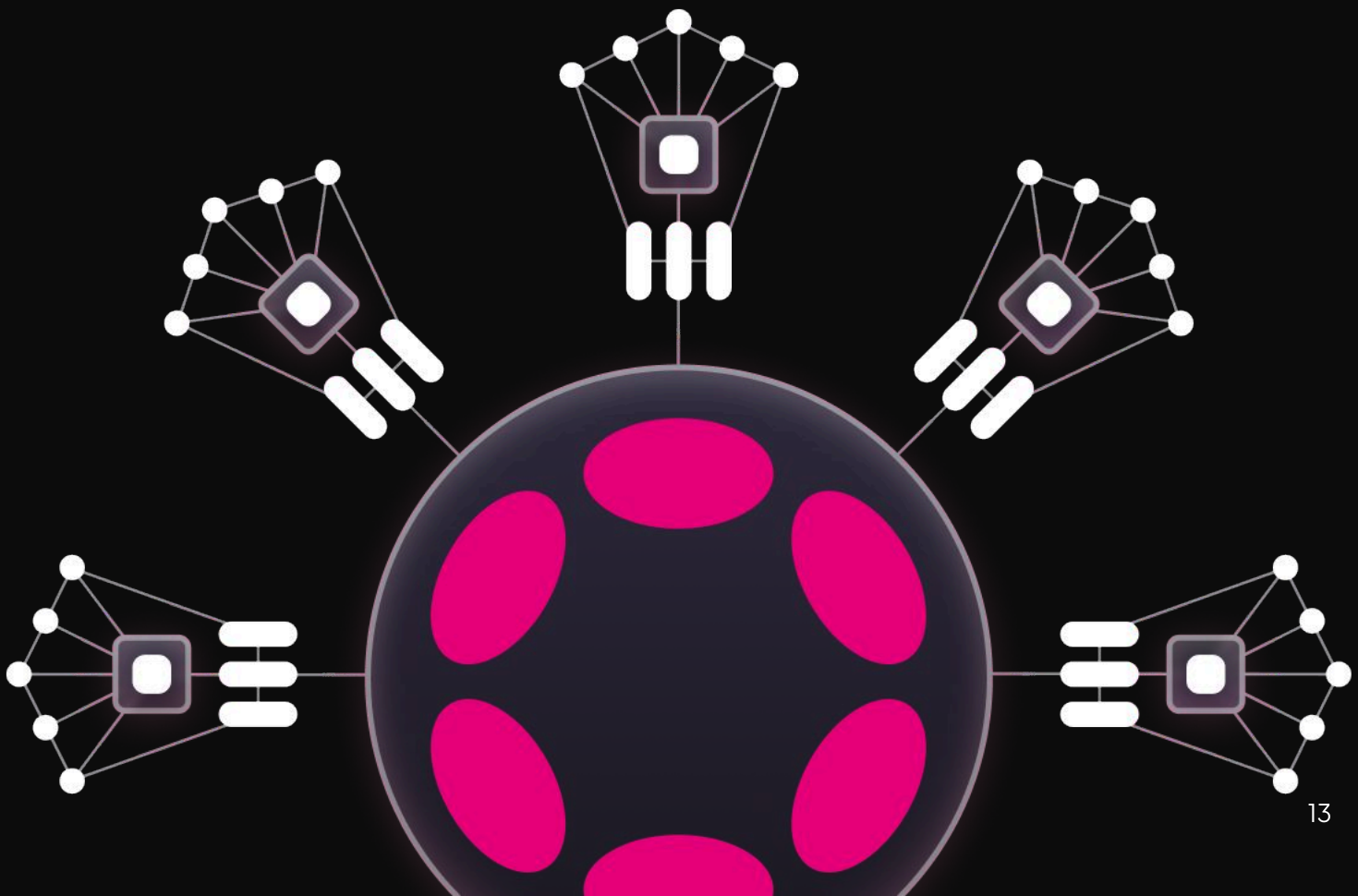
This seamless integration of security and interoperability is why Polkadot is regarded as Layer 0—it doesn't just secure a single blockchain, it secures an entire ecosystem of parachains.

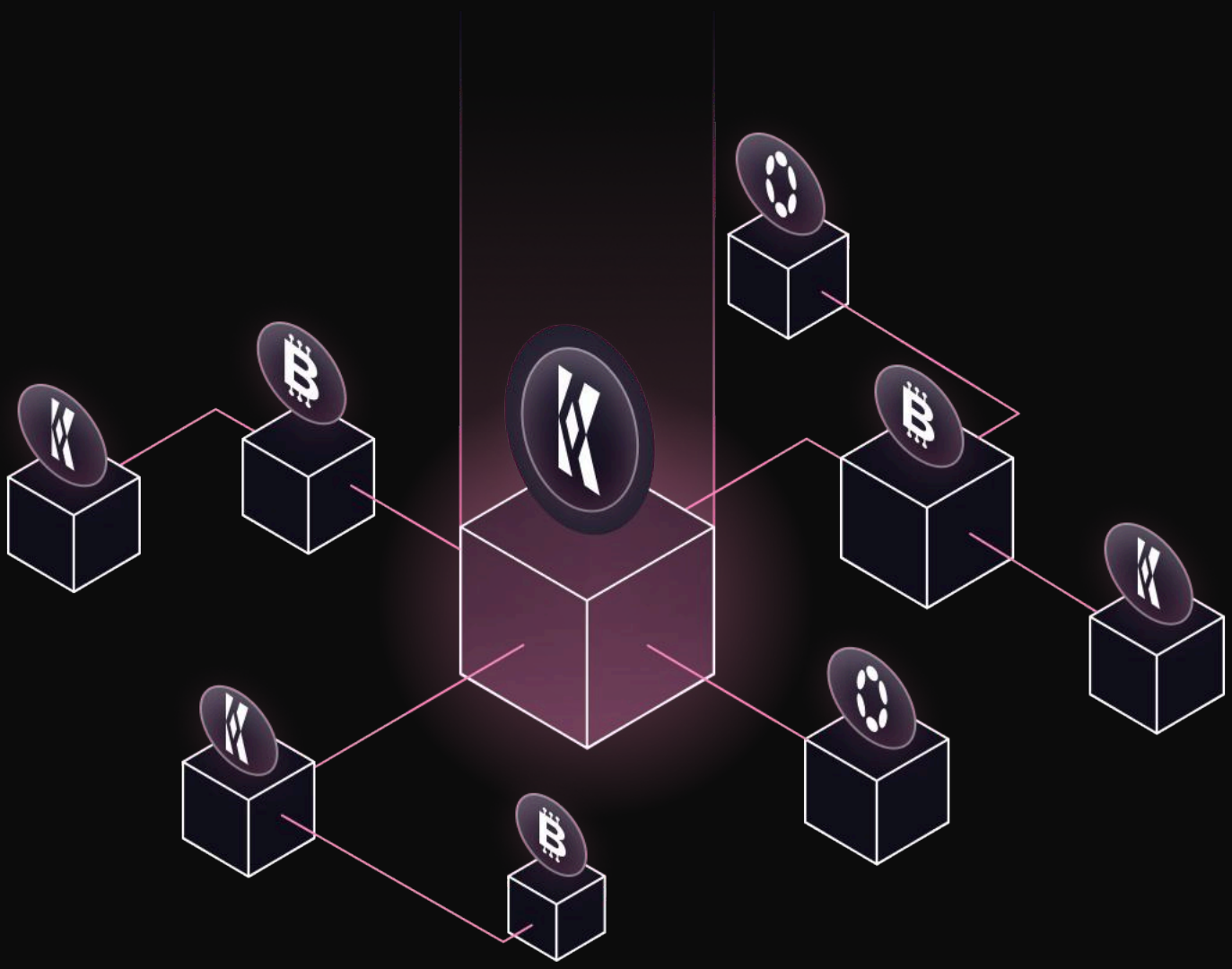
Mosaic Chain won a parachain slot for the next 2 years and will continue to stay in the ecosystem and follow protocol changes planned in Polkadot.

Scaling Made Easy for Polkadot's Parachains

Scalability is a critical challenge for any blockchain—but with Polkadot, it's built-in. By connecting to Polkadot as a parachain, Mosaic Chain automatically becomes part of a sharded network that spreads transaction execution across multiple blockchains.

Each block on Mosaic Chain (a "parablock") is validated and finalized by Polkadot, ensuring that no individual parachain, including Mosaic Chain, is ever overwhelmed. This powerful design eliminates scalability concerns, enabling Mosaic Chain to scale effortlessly alongside Polkadot's growing network.





Trustless Interoperability with XCM

One of the biggest risks in the crypto space today is bridging assets between blockchains. Traditional bridge technologies often depend on unreliable, centralized entities, leading to billions in losses through hacks and vulnerabilities.

Polkadot's Cross-Consensus Messaging (XCM) changes the game, offering a fully trustless, secure, and efficient way for blockchains to communicate and transfer assets.

For Mosaic Chain, XCM is a game-changer. It allows Mosaic Chain to securely send and receive crypto assets across blockchains, while also providing unmatched flexibility and programmability for developers.

With XCM, Mosaic Chain is not just part of Polkadot's ecosystem—it's a key player in creating a decentralized, interoperable future.

Seamless blockchain upgrades without hard forks

Just like any software, blockchains need regular updates to stay current and secure. Traditionally, these updates happen through hard forks, but hard forks come with significant challenges.

Every time a blockchain undergoes a hard fork, all validators must download new software onto their hardware, which requires extensive off-chain coordination and introduces risks.

Hard forks can be slow, disruptive, and even dangerous—potentially compromising transactions and splitting the community.

Polkadot's approach, which we adopt for Mosaic Chain, takes blockchain upgrades to the next level. With Forkless Runtime Upgrades, updates happen seamlessly within the blockchain itself.

Instead of requiring validators to install new software, the blockchain's logic is built directly into the chain, allowing validators to approve blocks based on the most up-to-date runtime.

This innovative, industry-leading technology allows Mosaic Chain to stay agile and future-proof, ensuring rolling out upgrades quickly, safely, and without disruption—just like Polkadot.

Meet Our Core Team

Behind Mosaic Chain is a passionate and dynamic team from Hungary, driven by innovation and a relentless pursuit of excellence. We're always on the lookout for fresh ideas, talented developers, and groundbreaking projects to collaborate on. For us, collaboration and creativity are the keys to success, and with your contributions, we believe we can achieve something extraordinary together.



Attila Vidákovics
CEO
economyst, crypto whiz kid, university lecturer (DeFi), radio presenter



Péter Molnár
CTO
economist, software engineer, smart contract wizard, blockchain architect, blockchain strategist

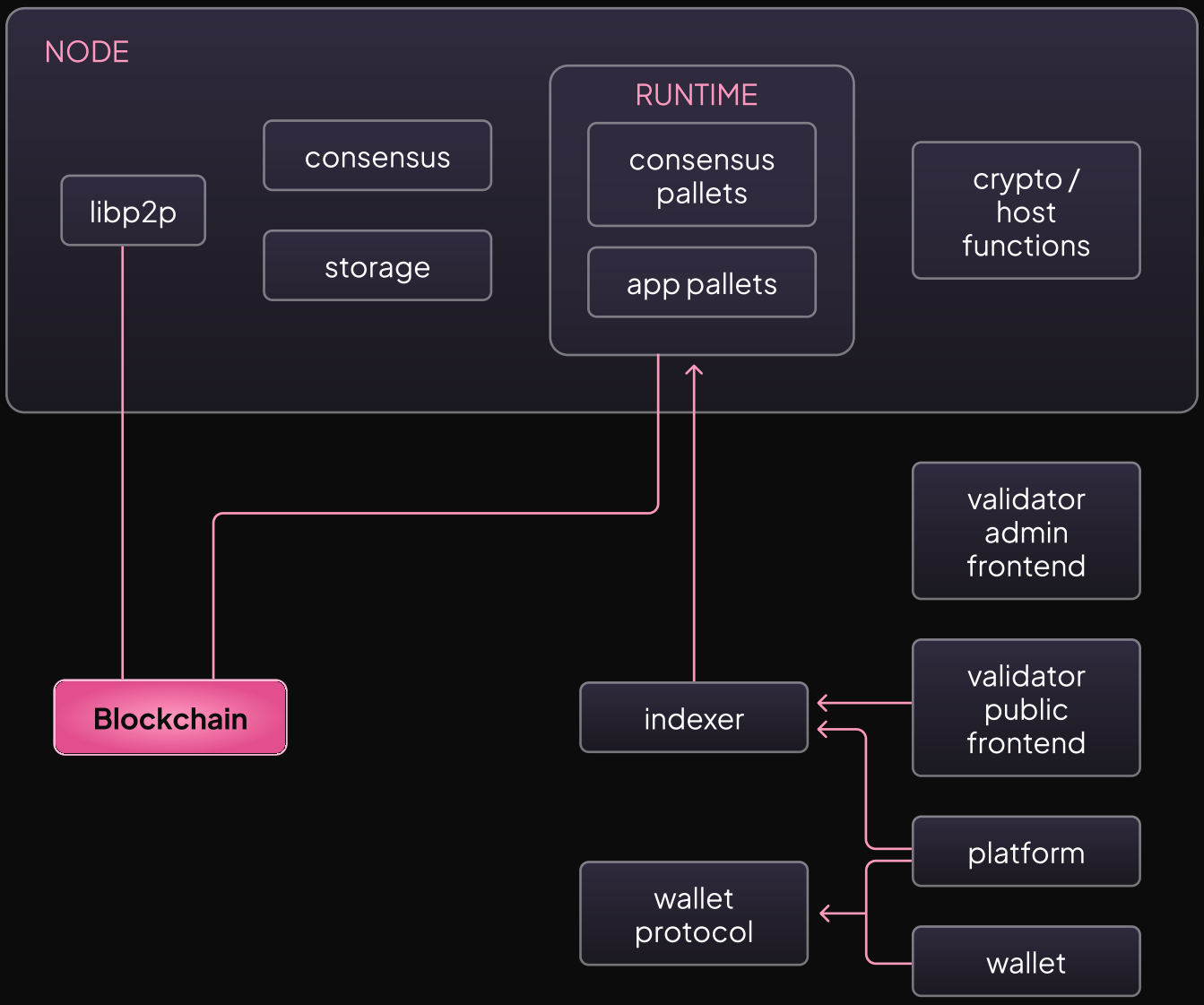


Tom the Great
PROJECT LEAD
engineer, economist, project management expert, former IT COO, controller,

For more details please visit www.mosaicchain.io

Technical details

Architectural design of Mosaic Chain



Our high-level architecture is similar to other substrate-based projects

Node

The Node is the backbone of our network, responsible for peer discovery, managing transaction requests, reaching consensus with peers, and responding to RPC calls.

Runtime

The Runtime defines the network's business logic for executing the state transition function of the blockchain. The architecture allows for on-chain runtime upgrades to remain agile and adapt to evolving requirements.

Indexer

Our Indexer provides efficient data querying, enabling developers and users to access blockchain data swiftly and reliably.

Public Frontend

Our Public Frontend, backed by the Indexer, offers anyone an intuitive interface to explore blockchain data and access essential information.

Validator Frontend

A user-friendly control panel for node operators, simplifying secure node management and facilitating real-time monitoring of node health, performance, and relevant on-chain data such as staking status and block rewards.

Wallet and Wallet protocol

User-friendly asset management interface for storing, sending, and receiving digital assets.

At Mosaic Chain, our design philosophy is all about accessibility and ease of use. We've crafted a validation process that's simple and intuitive, especially for first-time validators. By streamlining the setup, we're empowering newcomers to confidently join the network and participate without the need for advanced technical knowledge.

Validator subset selection

Mosaic Chain is designed to start with over 1,900 validators, ensuring a highly decentralized and secure network.

However, as the number of validators increases, the communication required by the Aura consensus algorithm also grows exponentially. To maintain efficiency, we select a subset of approximately 200 validators in each session to propose new blocks.

Our goal is to ensure fairness by maximizing the uniformity of weekly validator selections while maintaining unpredictability in the selection process. After extensive testing and running simulations on various algorithms, we chose an improved bucket selection algorithm for this purpose.

The Improved bucket selection algorithm

01
Every validator has two buckets initialized with independent uniform random numbers between 0 and 1

02
In a round every bucket's value is increased by subset_size/(2 * number_of_validators)

03
The validators with at least one full bucket (value greater or equal to 1) are the chosen subset for this round. One of their full buckets is decreased by the 0.5. The other 0.5 decrease is uniformly distributed between the validator's two buckets. After that we go to the 2. step.

With this algorithm and parameter setting the distribution of the selection counts is nearly uniform and the unpredictability (variance) is high.

To support these claims we present some diagrams which are the results of a simulation run with 1000 validators and 250 target subset size for a one-week timeframe with 12 seconds block time.

This means that the simulation lasts 201 sessions. (The last diagram is from a 31449 rounds long simulation to get a closer picture about the distribution.)

Technical highlights and challanges

Consensus (DPoS)

Mosaic Chain uses a custom Delegated Proof of Stake (DPoS) consensus mechanism. It's efficient, cost-effective, and sustainable—and it works differently from traditional DPoS systems. It is a bit similar to Polkadot's nominated proof-of-stake scheme.

You can learn more about Mosaic Chain's consensus on our documentation site.

Mosaic Docs / Consensus (DPoS)

NFT-based validators

Powering Mosaic Chain's Unique Consensus

PoS NFT
Owned by validators, these NFTs allow validators to participate in the consensus using their own self-stake.

01

DPoS NFTs
Also owned by validators, DPoS NFTs enable participation in the consensus with both self-stake and delegated stakes, along with a Delegation NFT.

02

Delegation NFTs
Representing additional stakes in MOS coins, these NFTs hold a nominal value in MOS coins and can be delegated to DPoS validators by delegators.

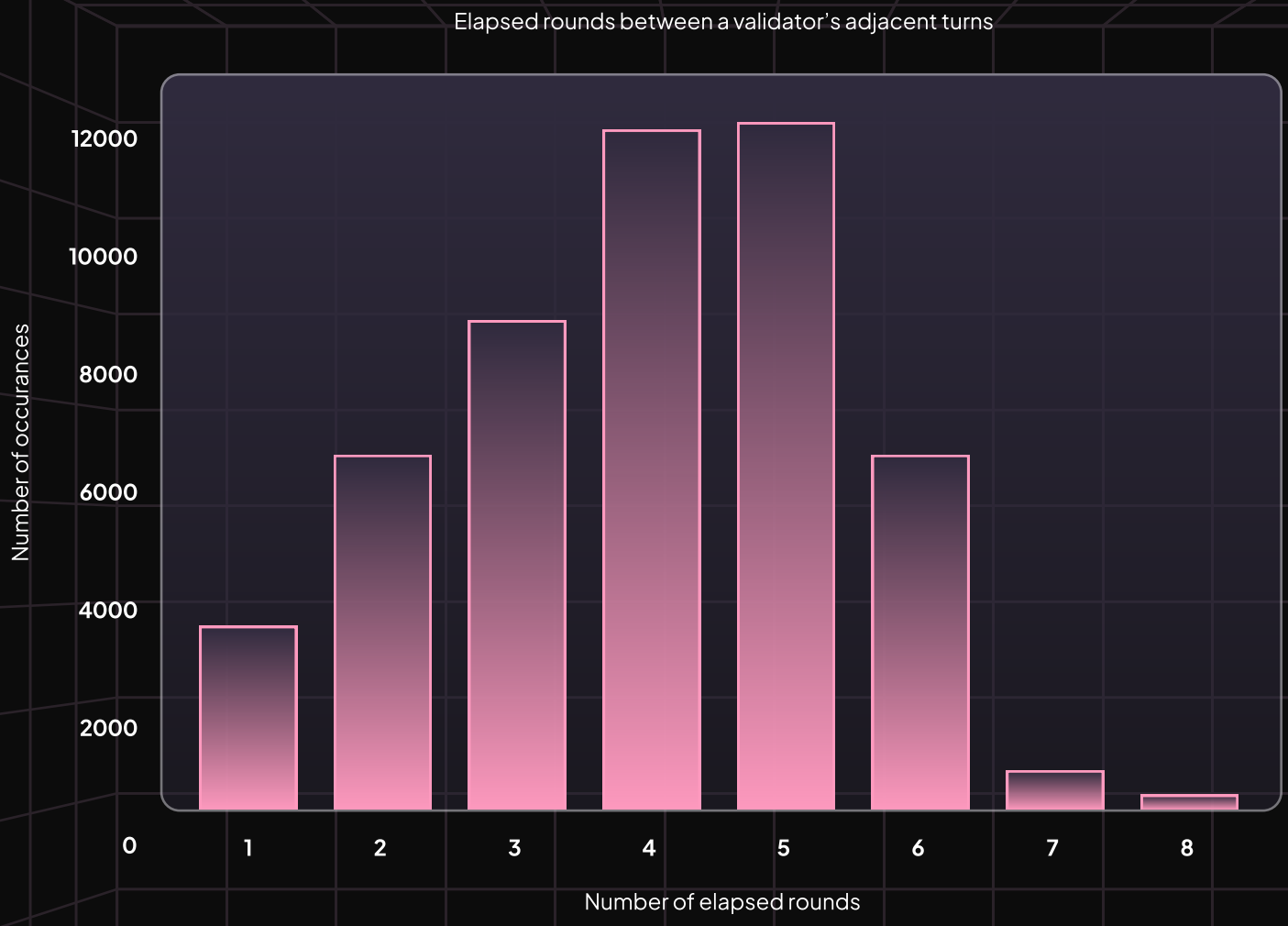
03

A well-designed and decentralized consensus mechanism is the backbone of any blockchain. That's why Mosaic Chain incorporates delegation NFTs, boosting economic security by allowing users to delegate their stakes to trusted validators.

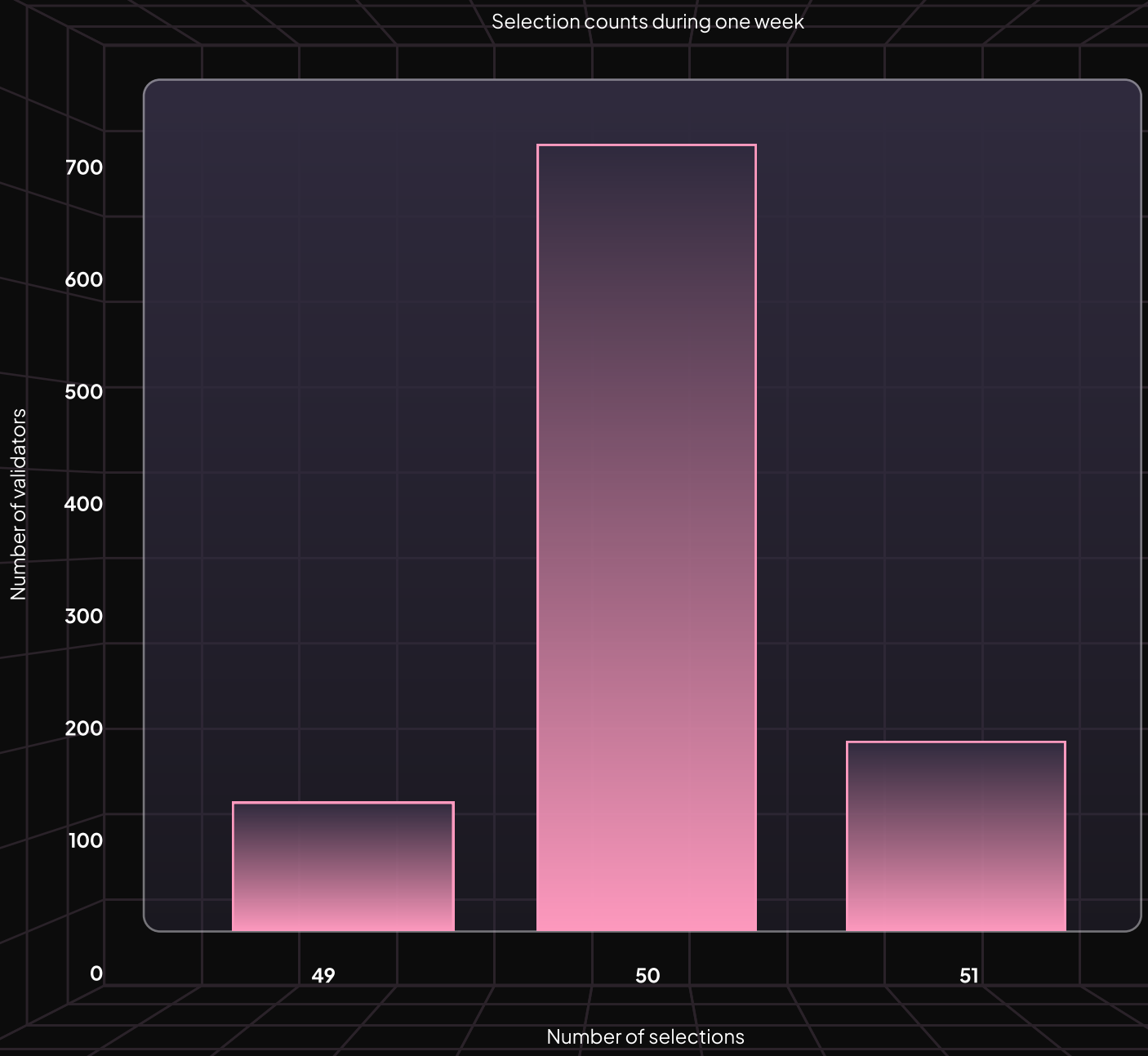
These NFTs not only increase the network's security but also incentivize proper behavior, as they are subject to slashing in case of validator misconduct.

Learn more here: Mosaic Docs / Actors

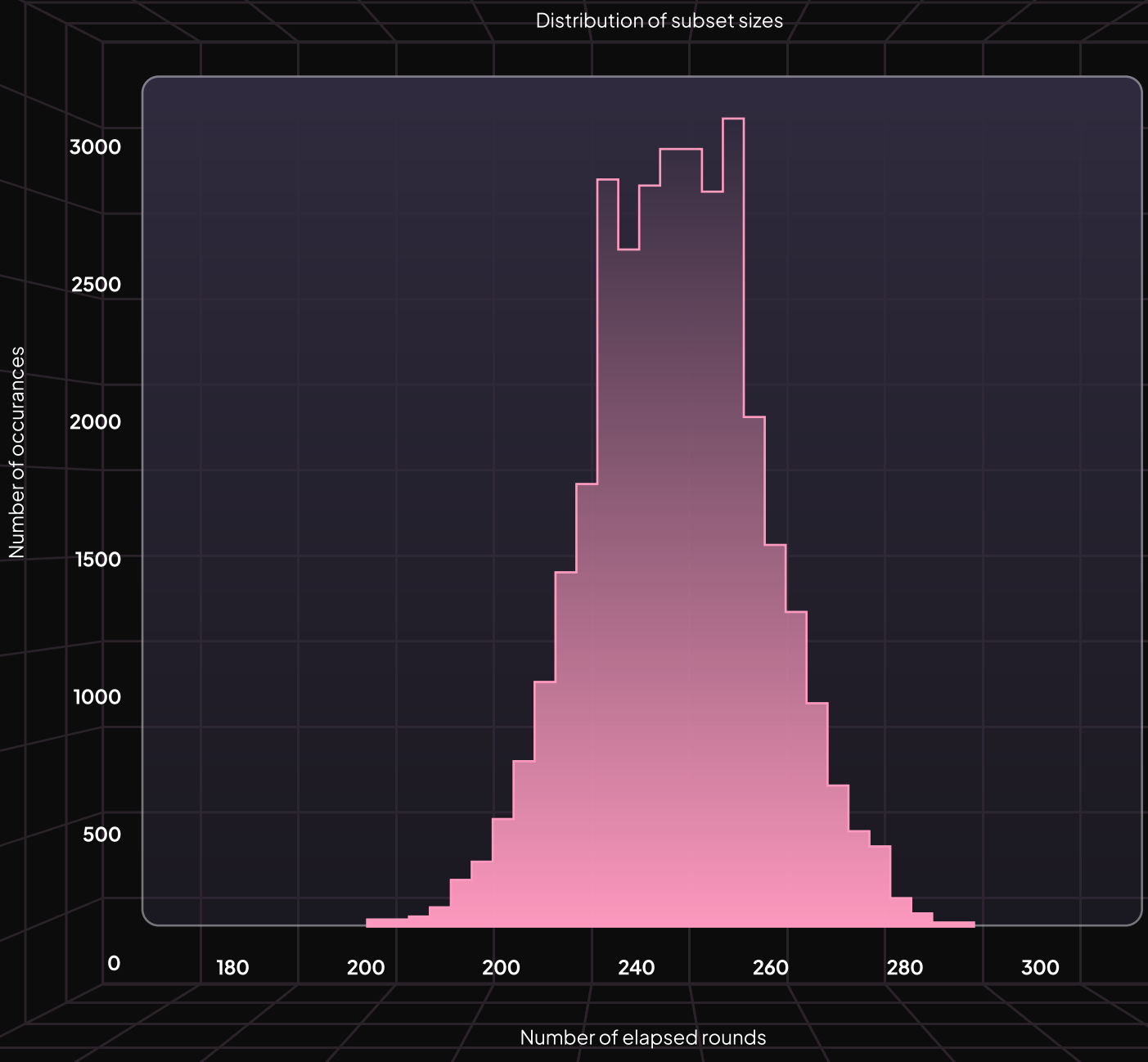
In the first bar chart we can see the distribution of the elapsed rounds between validators' adjacent turns. We can observe that it is **possible to select a validator in two adjacent sessions** the maximum waiting time is 8 sessions and the average is 4. Without more information it's hard to predict the next turn of a validator.



In the next chart, we see that over a one-week simulation, each validator was selected 49, 50, or 51 times, showcasing an almost perfectly uniform distribution. Over longer timeframes, these small variations even out completely, ensuring that every validator gets a fair and balanced opportunity to participate in the consensus process.



It's a consequence of the bucket selection algorithm that the subset sizes are not always 250. The last histogram shows the distribution of the subset sizes. It's a binomial distribution with 250 mean and 13.8 empirical standard deviation and can be effectively approximated with a Gaussian distribution.



Plug-and-Play Validators: Simple, Secure, and Open

At Mosaic Chain, we prioritize the user experience not just for Mosaic Chain's users, but for its validators too. We provide a specialized Debian-based Linux disk image that comes pre-configured with all the necessary security measures for operating as a P2P network node, ensuring validators can get started with ease and confidence.

System and blockchain node upgrades are delivered directly from our repositories by default, but for the power users out there, we've kept things flexible. You'll have the freedom to tinker and customize as you see fit, with the validator software open-sourced to provide a familiar experience for those already maintaining Substrate-based nodes.

Validator Node Requirements

Validator nodes serve a single purpose—validation. These nodes cannot be used to install or run any other programs or serve other functions. Any computer that meets the minimum requirements can act as a validator node, though some motherboards and computers may require adjustments, such as BIOS configurations.

Validator Node Requirements

- Motherboard **GigaByte B760M H DDR4** | **B760M DS3H DDR4** | **B760M GAMING DDR4**
- Recommended CPU **Intel Core i5-12400**
- Recommended RAM **32 GB RAM DDR4**
- Recommended storage **2×1 TB NVMe M.2 SSD Kingston NVMe SNV2S/1000G**
- Power Supply **Chieftec iARENA 700W Be Quiet! 700W Bronze System Power 9**
- Computer Case **Aigo B350 or Aigo B352**
- Operating System **Must be without any pre-installed OS.**

The Mosaic Chain prides itself on decentralization, with over 1,900 validators in operation. To preserve this decentralization, the following configurations are not supported:

- Running multiple validators on a single physical computer.
- Hosting multiple validators in the same location.
- Installing a validator in a cloud service (VPS) or with any service provider.
- Hosting validators in the same server park.

While we have plans to incentivize optional services requiring high-end GPUs in the future, it's not a requirement for now. Some data centers, like Hetzner, offer the necessary hardware, but be cautious—Hetzner and other data centers have previously shut down blockchain nodes without warning. That's why we recommend running your system at home, with backup power and network redundancy to ensure uninterrupted operation.

Network Requirements:

- Internet Connection: Only wired connections are supported, as WiFi is unreliable. The OS installation and validation process require a cable connection.
- Latency (Ping): Ideally below 50 milliseconds for optimal performance.
- Bandwidth: A guaranteed 30–40 Mbps bandwidth at the validator node should be sufficient.

Our specialized Linux distribution makes it easy for Mosaic Chain validators to join Mosaic VPN, a complimentary service that helps nodes connect to each other securely, even when they don't have public routable IP addresses.

ValidatorOS



To deliver a seamless plug-and-play experience for our validators, we have developed ValidatorOS—a powerful system that simplifies the entire onboarding process. ValidatorOS takes care of everything, from initial setup to full validator registration on Mosaic Chain.

With just a USB, new validators can instantly format and configure their system to meet the requirements of the network. Once the setup is complete, our intuitive, user-friendly interface guides them step-by-step through the process of connecting to the network, ensuring a smooth and hassle-free experience from start to finish.

Distributed as an ISO image:

- **Bootable installer for USB drives (minimum 16GB)**
- **Complete operating system with all validator software pre-installed**
- **No separate downloads or package installations require**

Plug-and-play design Minimal configuration required

Accessible to non-technical users No deep technical knowledge needed

Streamlined validator participation Get your node running quickly

Built for Mosaic Chain Optimized for validator operations

Pre-configured environment All dependencies and tools included

Learn more here: Mosaic Docs / ValidatorOS

Mosaic Explorer and Indexer

Mosaic Explorer is more than just a blockchain explorer—it's a multi-technology, decentralized infrastructure designed to provide real-time on-chain data in a truly decentralized way. Not only does it offer an intuitive user interface, but it also ensures seamless transmission of Mosaic Chain data to frontends, powering dApps and explorers with accuracy and speed.

Every Mosaic node plays a dual role: participating in consensus to build blocks and simultaneously transmitting on-chain data to the frontends. This ensures that Mosaic Chain's data flow is decentralized, efficient, and readily available for all users and applications.

Learn more here: Mosaic Chain Explorer



Staking

Staking allows MOS holders to participate in Mosaic Chain's Delegated Proof of Stake (DPoS) consensus mechanism.

There are two ways to participate

Validators

Run validator nodes, produce blocks, and earn rewards

Delegators

Stake MOS coins to validators and earn proportional rewards

Staking Contracts

When delegators stake with validators, they create staking contracts with specific terms.

Staking Contract Parameters

Minimum staking period 28 days (672 sessions) - Global minimum

Minimum staking amount 50 MOS - Global minimum

Commission rate Set by validator (minimum 1%)

Max contracts per validator 1,000

Max stake per validator 5% of total supply

- Delegators must commit to staking for at least 28 days
- Validators can set longer minimum staking periods
- Each validator can have up to 1,000 active staking contracts
- No single validator can control more than 5% of total supply

Learn more here: Mosaic Docs / Staking

Slashing & Chilling

Mosaic Chain's DPoS consensus mechanism provides an additional layer of security through slashing.

When validators misbehave, both validators and their delegators lose a percentage of their staked assets as a penalty. This economic disincentive ensures validators maintain high standards of performance and security.

Slashing is a penalty mechanism that reduces staked assets when validators (and delegators) fail to meet their responsibilities.

Slashing occurs when

- Validator goes offline for extended periods
- Validator double-signs blocks
- Validator engages in malicious behavior
- Other protocol violations

What gets slashed

- Validator's staked MOS coins
- Validator NFT's nominal value
- Delegators' staked MOS coins
- Delegator NFTs' nominal values

Slashed funds go to: Mosaic Chain Treasury, funding technical developments, community building, marketing, and other initiatives to expand the Mosaic Chain ecosystem.

Learn more here: Mosaic Docs / Slashing

Runtime components

Mosaic Chain's runtime is powered by pallets — modular components that execute specific functions and business logic on the blockchain. These pallets are the backbone of Mosaic Chain, divided into two essential groups:

Consensus-related Pallets

These are critical for ensuring network security and integrity, forming the core of our consensus mechanism.

Application-related Pallets

These provide the logic necessary for decentralized applications (dApps), such as Mosaic Alpha, to operate seamlessly.

Key consensus-related pallets

NFT-permission

- The pallet is built on top of the 'pallet-nfts' pallet to manage the creation, ownership, and attributes of the permission NFTs.
- The pallet allows users to mint new permission NFTs, bind/unbind NFTs to/from their accounts, and chill/unchill NFTs to prevent/re-enable their use

Staking

- The pallet provides functionality to stake/unstake currency/NFTs and to kick NFTs.

NFT-Delegation

- The pallet manages NFTs representing delegation rights in a staking system¸
- Allows for minting, binding, unbinding, and slashing these NFTs¸
- It handles expiration checks for bound tokens and provides a trait for custom logic when an NFT expires.

Validator-subset-selection

- The pallet makes it possible to select a subset of the validators to create blocks in the next session¸
- Manages sessions so that a session's length is equal to the number of selected validators.

Some of these are available open-source at

https://github.com/Mosaic-Chain/mosaic-chain

The Mosaic Coin: Powering Mosaic Chain

At the core of the Mosaic Chain ecosystem is Mosaic Coin (MOS), the lifeblood of the Mosaic Chain. Designed to fuel the financial innovation and security of Mosaic Chain, MOS plays a crucial role in every transaction, staking operation, and governance decision across the network.

With Mosaic Chain's cutting-edge technology and robust validator ecosystem, MOS is built to empower users and developers alike, paving the way for a new era in decentralized finance.

Mosaic Coin Overview

Name: Mosaic Coin
Symbol: MOS

MOS is at the heart of Mosaic Chain's operations, supporting everything from transaction settlements to network governance. With its tokenomics, MOS ensures a fair, balanced, and secure network for all participants.

Token Functions

Transaction Fees
MOS is used to settle all network transaction and service fees, ensuring smooth and cost-effective operations.

01

Governance
MOS holders have the power to shape the future of Mosaic Chain by participating in governance decisions and protocol upgrades.

02

Staking and Security
Validators and delegators stake MOS to secure the network, with rewards incentivizing active participation in maintaining network integrity.

03

Tokenomics and Allocation

To ensure the long-term sustainability and growth of Mosaic Chain, MOS has been thoughtfully allocated across key areas. Please note that the following numbers will change and will only be final when Mosaic Chain is launched.

Category	Allocation (MOS)	Purpose
Staking Incentive Pool	**500,000,000**	Release starts from year 4, continuously over 8 years
Pre-Sale	**178,058,599**	2–4 year vesting period
Treasury	**10,000,000**	Growing continuously, with governance managing its strategic use.
Development and Innovation	**24,000,000**	Fueling future technological advancements and ecosystem growth.
Financial and Liquidity Funds	**20,000,000**	
Marketing and Community Building	**20,000,000**	Driving user adoption and building a strong, engaged community.
Team and Advisors Support	**8,000,000**	Supporting the talented minds shaping Mosaic Chain.
Security and Compliance	**4,000,000**	Ensuring the highest level of network security and compliance.
Education and Documentation	**2,400,000**	Empowering users with knowledge and resources to maximize the platform's potential.

Key Definitions

Premined Tokens All tokens minted at launch, except pretokens.

Total Supply Includes all minted tokens, whether locked or not.

Circulating Supply Tokens that are minted and unlocked, excluding the staking incentive pool.

Max Supply The theoretical maximum supply, set at 2,000,000,000 MOS

Staking Incentive Tokens rewarded at a later stage to incentivize long-term staking.

Token Generation Event The point in time from which block rewards begin to be produced.

Tokenomics Overview

Max Supply 2,000,000,000 MOS

Block Time 6 seconds

Session Length 1 hour

Validator Slacking Period 72 sessions

Global Minimum Staking Period 28 days (672 sessions)

Global Minimum Commission Rate 1%

Global Minimum Staking Amount 1 MOS

Max Contracts per Validator 1,000

Max Stake per Validator 5% of the total supply

Treasury/Fund Spending Period 28 days (672 sessions)

Validator Subset Selection Target 200 validators per session

Staking Incentive

The staking incentive pool is designed to encourage long-term staking. Starting from year 4, continuously over 8 years.

A staker's reward will depend on the amount staked and the time it remains staked.

The staking incentive pool is initially controlled by a dedicated account via the staking incentive pallet, with details on the reward distribution method to be determined.

Pretokens

Pretokens are distributed as part of the presale and are subject to a vesting schedule based on the amount. The vesting period lasts between 2–4 years, calculated through a formula that factors in the token amount.

Additionally, users have the option to convert vested pretokens into stakable MOS, which will be locked until the original vesting period ends. These locked tokens can be staked but are otherwise restricted.

Treasury

The treasury is governed by the chain's governance system, which allocates funds for various purposes. Any individual can propose a spending allocation in exchange for a deposit. Proposals, if approved, become available at the end of the current spending period.

The treasury is funded by 20% of block rewards and 10% of transaction fees. To encourage the use of treasury funds, a portion is burned every six months, and an automatic 1% burn rate is applied per spending period.

Funds

Specific funds are allocated for the development and growth of Mosaic Chain. These funds operate similarly to the treasury but are governed by separate collectives and do not receive continuous income.

Unused funds are subject to a periodic burn, in addition to the 1% burn per spending period. Treasury funds can be used to replenish these special-purpose funds.

Staking Updates

Two key updates to the staking model

01
PoS validators cannot self-stake beyond the initial nominal value of their NFT

02
Delegator NFT expiry begins when staking starts

Expansion (Block Reward)

The expansion rate, synonymous with the average block reward, is calculated as follows:

$$F = 12.5 \times \sqrt{\frac{max_supply - max(circulating_supply, 100,000,000)}{max_supply - 100,000,000}}$$

This function adjusts block rewards based on the number of active and bound validators and is distributed among them proportionally. Each session recalculates rewards, skimming off 20% for the treasury.

Transaction Fees and Tips

Transaction fees are distributed as follows:

- 40% is burned.
- 50% goes to the validator producing the block.
- 10% goes to the treasury.

Any tip provided beyond the mandatory fee is allocated entirely to the block-producing validator.

Inflation and Deflation Model

Mosaic Chain's economic model strikes a balance between growth and sustainability.

- **Inflation:** New MOS tokens are issued to reward validators and delegators, incentivizing network participation during its growth phase.
- **Deflation:** Mosaic Chain burns 40% of all transaction fees and conducts bi-annual Treasury burns, reducing supply and driving long-term value for holders.

This dual approach ensures the network remains both scalable and sustainable, with inflation supporting growth in the early stages and deflation kicking in as transaction volumes increase.

Sustainable Network Design

With a block time of just 6 seconds and over 1,500 validators at launch, Mosaic Chain offers unparalleled decentralization and speed. The Initial Block Reward of 12.5 MOS decreases as the network matures, ensuring a dynamic and adaptive reward system that keeps staking attractive while maintaining the network's health.

A Vision for the Future

By empowering validators, fostering governance participation, and ensuring robust tokenomics, MOS fuels the vision of a world where decentralized finance is accessible to everyone. Through this balanced economic model, Mosaic Chain is positioned for long-term success, security, and continuous innovation.

Roadmap

Click here to explore our roadmap

